

AMENDMENTS TO THE SPECIFICATION:

Please amend paragraph [0007] as shown below:

[0007] According to one embodiment, a spectrometer is provided that includes a first collection device that includes an adjustable-optical path and that is configured to collect a first portion of a wavefront; a second collection device configured to collect a second portion of the wavefront; combiner optics configured to interfere the first and second portions of the wavefront at an image plane of the first and second collector devices to form interference patterns at the image plane; and a Fourier transformation module configured to derive spectral information from the interference patterns. According to a specific embodiment, the Fourier transformation module is configured to Fourier transform the interference patterns to derive the spectral information. According to another specific embodiment, to derive the spectral information, the Fourier ~~transform~~ transformation module is configured to Fourier transform the interference patterns of the wavefront with the adjustable-optical path set at a variety of path lengths.

Please amend paragraph [0008] as shown below:

[0008] According to another embodiment, a spectrometer is provided that includes a plurality of sub-aperture telescopes forming an ~~sparse~~ extended aperture telescope, wherein each sub-aperture telescope includes an adjustable optical-path and is configured to collect a select portion of a wavefront; combiner optics configured to interfere the select portions of the wavefront at an image plane of the plurality of sub-aperture telescopes to form interference patterns at the image plane; and a Fourier transformation module configured to derive spectral information from the interference patterns. According to a specific embodiment, to derive the spectral information,

the Fourier ~~transform~~ transformation module is configured to Fourier transform the interference patterns with one or more of the adjustable-optical paths set at a variety of path lengths. The variety of path lengths ~~represent~~ represents a relative path-length difference between one or more of the adjustable-optical paths.

Please amend paragraph [0009] as shown below:

[0009] According to another embodiment, a Fourier transform spectrometer is provided that includes a Fizeau interferometer having a plurality of optical collectors, wherein one or more of the optical collectors includes an adjustable-optical path, and wherein each optical collector is configured to collect a select portion of a wavefront; and a Fourier transformation module configured to derive spectral information of the wavefront from interference patterns of the select portions of the wavefront. According to a specific embodiment, the Fizeau interferometer forms an extended aperture telescope. According to another specific embodiment, the spectrometer is configured to be deployed in space. According to another specific embodiment, to derive the spectral information, the Fourier ~~transform~~ transformation module is configured to Fourier transform the interference patterns of the wavefront with one or more of the adjustable-optical paths set at a variety of path lengths.

Please amend paragraph [0010] as shown below:

[0010] According to another embodiment, a method is provided for deriving spectral information from a wavefront and includes collecting a plurality of select portions of a wavefront with a corresponding plurality of ~~multi-aperture~~ sub-aperture telescopes which form a multi-

aperture telescope; interfering the select portions of the wavefront at an image plane of the multi-aperture telescope to form interference patterns at the image plane; and Fourier transforming the interference patterns to derive spectral information for the wavefront. According to a specific embodiment, the method further includes generating a spectrogram from the spectral information. According to another specific embodiment, interfering the select portions of the wavefront includes interfering the select portions of the wavefront with a combiner telescope. According to another specific embodiment, the method further includes pistoning adjustable-optical paths of the sub-aperture telescopes at a plurality of positions; wherein each of the interference patterns corresponds to a select piston position of the adjustable-optical paths.

Please amend paragraph [0029] as shown below:

[0029] While Fizeau interferometer 105 has been characterized above as including two collection devices, embodiments of the present invention may include Fizeau interferometers that include more than two collection devices. For example, U.S. Patent ~~Application~~ No. 5,905,591 of Duncan et al., filed February 18, 1997, titled Multi-Aperture Imaging System, ~~which~~ which is incorporated herein by reference for all purposes and is owned by Lockheed Martin Corporation, owner of the present invention, describes a multi-aperture telescope forming a Fizeau interferometer that includes a number of ~~sub-apertures~~ sub-aperture telescopes and may be included in a Fourier transform spectrometer according to an embodiment of the present invention. FIG. 5 shows a top view of another Fizeau interferometer 500 that includes nine collection devices labeled 505a – 505i that may be includes in another embodiment of the present invention. Each of collection devices 505a – 505i may be configured similarly to the collection devices described above.~~[[,]]~~ For example, each of the collection devices may include an optical-path-delay mechanism, such as that

shown in FIG. 1 and described above. One or more of the optical-path-delay mechanisms of collection devices 505a – 505i may be adjusted to vary their corresponding adjustable-optical paths to generate interference patterns that are Fourier transformed. It should be understood that while the foregoing described exemplary embodiments include two, nine[[,]] and twelve collection devices, embodiments of the present invention are not limited to these numbers of collection devices. Nearly any number of collection devices may be included in Fizeau interferometers that may be included in Fourier transform spectrometers according to embodiments of the present invention. Therefore, the ~~forgoing~~ foregoing examples are not limiting on the invention as claimed, but should be understood to be exemplary embodiments. While the above-described embodiments of Fourier transform spectrometers include Fizeau interferometers that include a number of collection devices, not all collection devices need be used in combination to form interference patterns. Fewer than the total number of collection ~~device~~ devices included in a Fizeau interferometer may be used to generate interference patterns. For example, collection devices 505a – 505c may be used to generate the interference pattern shown in FIG. 6.